



Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

October 5, 1994

9456659

Ms. Carolyn C. Haass
U.S. Department of Energy
Richland Operations Office
P. O. Box 550
MSIN S7-51
Richland, WA 99352-0550

Dear Ms. Haass:

TRANSMITTAL OF BIOLOGICAL AND CULTURAL RESOURCES REVIEWS FOR THE TANK WASTE
REMEDIATION SYSTEM PROPOSED SITES

Attached are the Biological and Cultural Resources Reviews of Sites A, B, and C for the proposed Tank Waste Remediation System (TWRS) Complex (Attachment 1). Biological and Cultural Resources Reviews also were conducted within the perimeter of the 200 East and 200 West Area Tank Farms, and are included in Attachment 2. These reviews were conducted by the Pacific Northwest Laboratory in support of Tank Waste Remediation System Program.

Please transmit these Reviews to Mr. W. T. Glover, Jacobs Engineering Group, at your earliest possible convenience. They will use these Reviews in order to write the Tank Waste Retrieval Systems, Environmental Impact Statement.

Should you have any questions pertaining to these reviews, please contact me on 373-2821.

Very truly yours,

L. E. Borneman, Manager
Tank Waste Remediation System
Compliance Plans

ss

Attachments 2

RL - R. O. Puthoff (w/o attachments)

9456659

ATTACHMENT 1



Battelle

Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509)

373-2894

August 16, 1994

Mr. C. R. Pasternak
Site Infrastructure Division
Richland Operations Office
Department of Energy
P. O. Box 550/A7-27
Richland, WA 99352

Dear Mr. Pasternak:

**CULTURAL RESOURCES REVIEW OF THE TANK WASTE REMEDIATION SYSTEMS
COMPLEX - SITE A. HCRC #94-600-054.**

The Hanford Cultural Resources Laboratory (HCRL) has completed the survey for the Tank Waste Remediation Systems Complex - Site A project, requested by Westinghouse Hanford Company. The HCRL recorded two new prehistoric isolates during the survey. The literature and records review revealed that an additional prehistoric isolate (HI-94-003, recorded during HCRC #94-600-001; isolate form previously submitted) and an historic site (HT-89-032, recorded during HCRC #89-600-010) were found during previous surveys within the project area. The historic site was revisited and HCRL staff found that some artifacts that were present when the site was first recorded in 1989 are now missing. The HCRL finds that the site and isolates are not potentially eligible for inclusion on the National Register of Historic Places due to their lack of physical integrity. Although no direct impacts to any known historic properties will occur from this project, there could be indirect impacts, including visual and noise, on the traditional cultural properties of Gable Mountain and Gable Butte.

The enclosed copies of the survey narrative, one site form (including the original 1989 form and the updated 1994 form), isolate forms from the two new isolates and the request information are for your review and submittal to the State Historic Preservation Officer (SHPO) and the appropriate Native American tribes, with one copy for your records.

Please contact the HCRL if you have any questions about this project.

Very truly yours,

P. R. Nickens
Project Manager
Cultural Resources Project

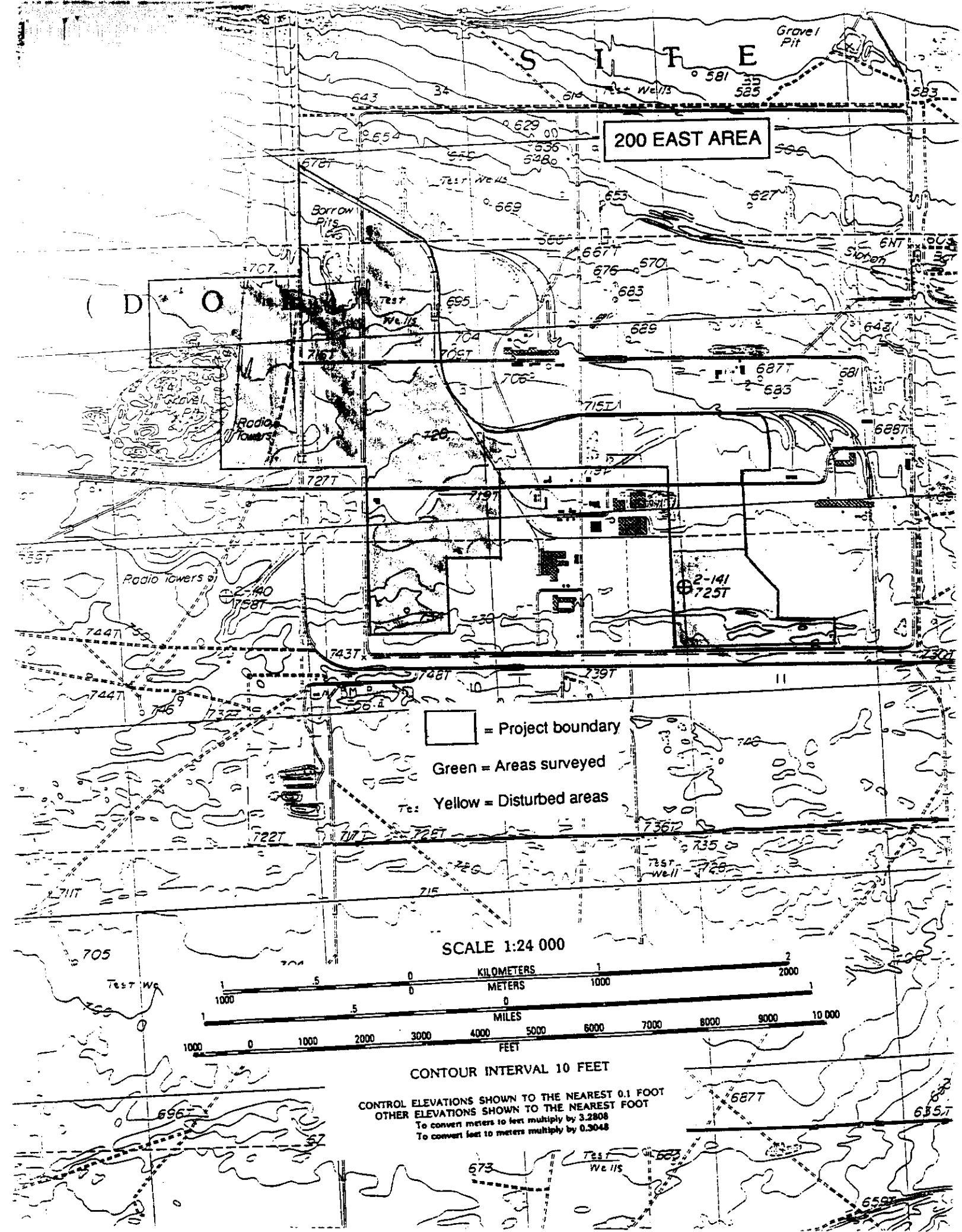
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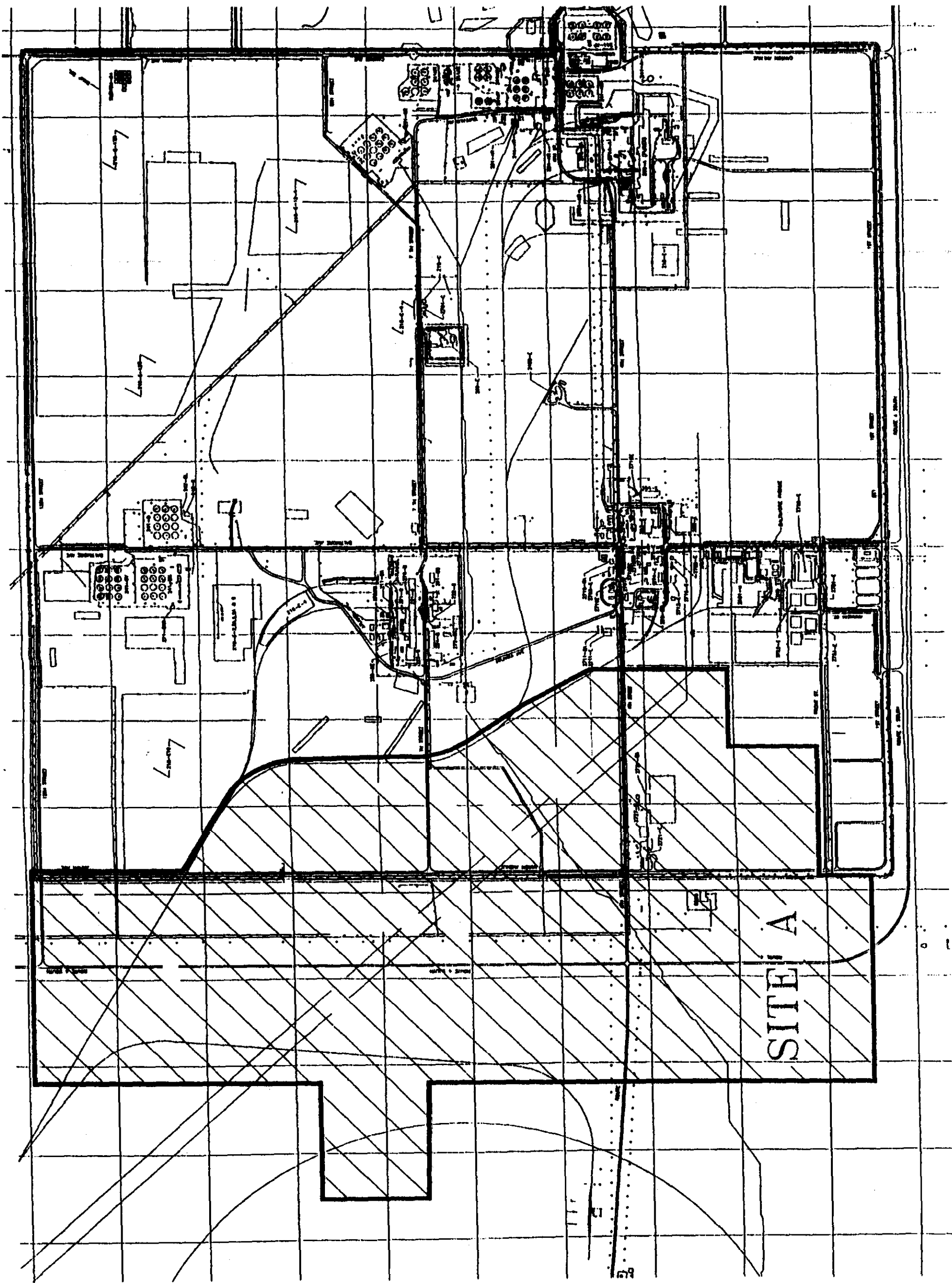
Enclosures

cc: J. Granger
R. E. Jaquish
G. McClure
LB/File

TWRS Complex Site A - Addendum

The Site A area boundaries for the TWRS Complex project changed dimensions since the cultural resources survey was completed. However, all of the area within the most current project boundaries has been surveyed. The western extension, not covered in the original survey narrative, was surveyed for the Spent Nuclear Storage Facility project, HCRC #94-600-001. No archaeological or historic materials were found in that area during the survey. The current map of Site A is included.





CULTURAL RESOURCES REPORT NARRATIVE

HANFORD CULTURAL RESOURCES LABORATORY Pacific Northwest Laboratory

A. NAME AND FULL DESCRIPTION OF THE PROPOSED UNDERTAKING

Project Number: HCRC # 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

The survey was done in response to a proposed project that will involve the construction of the Tank Waste Remediation Systems complex. The current proposed site location (Site A) is to the west of the 200 East Area, of the Hanford Site in south central Washington State (Figure 1). The Hanford Site is managed by the Department of Energy. The proposed site measures 2.81 km², however a considerable amount of the area had been walked by previous surveys, and a gravel pit which is actively being mined (0.11 km²), is within the project area. A pedestrian survey covering 1.42 km² of previously unsurveyed or undisturbed ground was conducted in July of 1994.

B. LOCATION AND GENERAL ENVIRONMENTAL SETTING

The Tank Waste Remediation Systems complex, Site A, will be located west of the 200 East Area (Figure 1), on the 200 Area Plateau. The surface topography is low-relief stabilized dunes with the dunes having a greater amplitude in the southern part of the project area. The dunes consist of particles that range from silt to fine sand. The closest source of permanent water is the Columbia River, approximately 12.5 km to the east. A spring at West Lake is located 3.4 km from the northeastern corner of the project area and may have provided an intermittent source of water. Elevations in the project area range from 198 m (650 ft.) in the northern part to 230m (756 ft.) in the southern part. Gable Mountain and Gable Butte are located approximately 4.0 km to the north of the project area. These landforms are considered sacred by the Wanapum and Yakama peoples and are considered traditional cultural properties. Gable Mountain and Gable Butte are considered to be eligible for listing on the National Register of Historic Places.

Modern disturbances in the project area include Hanford related developments and include roads, rail lines, borrow pits, and pipelines. Much of the disturbance in the project area appears recent (within the last 5 years). This disturbance consists of the extension of the borrow pit area and the creation of new dirt roads.

The vegetation is a steppe-shrub community (Daubenmire 1970) dominated by big sagebrush (*Artemisia tridentata*) with an understory of forbs and grasses in the areas that have not been previously disturbed. Grasses, particularly the non-native cheatgrass (*Bromus tectorum*), reduce ground visibility significantly. Cheat grass and Russian thistle (*Salsola kali*) are dominant on areas within developments (e. g. underground pipelines, borrow pits). Other annual forbs were also found in the disturbed areas, with some of the native shrubs, forbs, and grasses recolonizing the older disturbed areas. Plant species identified during the survey within the proposed project area are listed in Table 1.

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

Table 1. Plant species on the proposed site of the TWRS complex; Site A.

	<u>Species</u>	<u>Common name</u>
Annual grass	<u>Bromus tectorum</u>	Cheat grass
Perennial grass	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Poa Sandbergii</u>	Sandberg's bluegrass
	<u>Sitanion hystrix</u>	Bottlebrush squirreltail
	<u>Stipa comata</u>	Needle-and-thread grass
Annual forbs	<u>Ambrosia acanthicarpa</u>	Bur ragweed
	<u>Cryptantha circumscissa</u>	Matted cryptantha
	<u>Descurainia pinnata</u>	Tansy mustard
	<u>Lactuca serriola</u>	Prickly lettuce
	<u>Salsola kali</u>	Russian thistle
	<u>Sisymbrium altissimum</u>	Tumble mustard
Perennial forbs	<u>Achillea millefolium</u>	Yarrow
	<u>Agoseris glauca</u>	False dandelion
	<u>Balsamorhiza careyana</u>	Carey's balsamroot
	<u>Calochortus macrocarpus</u>	Sagebrush mariposa lily
	<u>Comandra umbellata</u>	Bastard Toad flax
	<u>Cymopterus terebinthinus</u>	Turpentine springparsley
	<u>Erigeron filifolius</u>	Threadleaf fleabane
	<u>Erigeron linearis</u>	Desert yellowdaisy
	<u>Machaeranthera canescens</u>	Hoary aster
	<u>Oenothera pallida</u>	Pale evening-primrose
	<u>Phlox longifolia</u>	Longleaf phlox
	<u>Psoralea lanceolata</u>	Dune scurfspea
	<u>Sphaeralcea munroana</u>	Orange globe mallow
Shrubs	<u>Artemisia tridentata</u>	Big sage
	<u>Chrysothamnus nauseosus</u>	Gray rabbitbrush
	<u>Chrysothamnus viscidiflorus</u>	Green rabbitbrush
	<u>Grayia spinosa</u>	Spiny hopsage

Table 2 lists those animal species or their sign which were observed at the site during survey in July of 1994.

Table 2. Animals or their sign observed at the proposed site of the TWRS Complex; Site A.

	<u>Scientific name</u>	<u>Common name</u>
Mammals	<u>Canis latrans</u>	Coyotes
	<u>Cervus elaphus</u>	Elk
	<u>Citellus townsendii</u>	Townsend's ground squirrel
	<u>Lepus californicus</u>	Black-tailed jackrabbit
	<u>Odocoileus hemionus</u>	Mule deer
	<u>Perognathus parvus</u>	Great Basin pocket mouse

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054
 Project Name: Tank Waste Remediation Systems Complex (TWRS)

	<u>Peromyscus maniculatus</u>	Deer mouse
	<u>Taxidea taxus</u>	Badger
	<u>Thomomys talpoides</u>	Northern pocket gopher
Birds	<u>Amphispiza belli</u>	Sage sparrow
	<u>Charadrius vociferus</u>	Killdeer
	<u>Chordeiles minor</u>	Common nighthawk
	<u>Hirundo pyrrhonota</u>	Cliff swallows
	<u>Eremophila alpestris</u>	Horned lark
	<u>Sturnella neglecta</u>	Western meadowlark
Reptiles	<u>Uta stansburiana</u>	Sideblotched lizard

Aerial photograph(s): EG&G 5673, exp. 084, 5/7/87, 1:19900
 EG&G 5673, exp. 107, 5/7/87, 1:19900
 EG&G 5671, exp. 078, 5/6/87, 1:5970
 EG&G 5671, exp. 077, 5/6/87, 1:5970

USGS topographic map(s): Gable Butte, Washington 7.5 minute quadrangle. 1986 edition.

Legal description: T13 N R 26 E Sections 33 & 34
 T12 N R 26 E Sections 3, 4, 9 & 10

UTMs: Corners of area reviewed (see Figure 2):

<u>Map Reference Point</u>	<u>Zone</u>	<u>m Northing</u>	<u>m Easting</u>
A	11	5160250	303000
B	11	5160230	304400
C	11	5159710	304410
D	11	5158121	305110
E	11	5158170	304850
F	11	5157460	304850
G	11	5157460	304300
H	11	5158170	304350
I	11	5158210	304010
J	11	5157470	304000
K	11	5157470	303840
L	11	5157550	303000
M	11	5157930	303000
N	11	5158250	303280
O	11	5159690	303000
P	11	5159290	304400

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054
Project Name: Tank Waste Remediation Systems Complex (TWRS)

Q	11	5159290	304120
R	11	5158870	304110
S	11	5158330	304110
T	11	5158330	304020
U	11	5158880	304020
V	11	5159520	304060
W	11	5159540	303250

C. PRE-FIELD RESEARCH

1. Sources of information checked:

- ☒ Survey and Site Location Maps
- ☒ Previous Reports
- ☒ Aerial Photographs
- ☒ GLO Plats

Two significant features are indicated on the 1880 GLO plats near the project area. The White Bluffs Road is located approximately 0.5 mi to the northwest. Another trail is indicated about 1.0 mi south of the project area.

2. Summary of previous studies in this general area, similar terrain: Projects within 0.9 km are listed below.

<u>Report No./Title</u>	<u>Distance/Direction</u>	<u>Results</u>
HCRC # 87-200-003	0.25 km to the east	No historic properties.
HCRC # 87-200-004	Within the project area	No historic properties.
HCRC # 87-200-012	Within the project area	No historic properties.
HCRC # 87-200-037	0.5 km to the east	No historic properties.
HCRC # 87-200-046	0.6 km to the east	No historic properties.
HCRC # 88-200-034	Adjacent to eastern border of project area	No historic properties.
HCRC # 88-200-044	0.7 km to the west	No historic properties.
HCRC # 89--600-010	Within the project area	HT-89-032: Historic wooden structure (corral/chute & gate) and associated trash. One prehistoric artifact.

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054
Project Name: Tank Waste Remediation Systems Complex (TWRS)

HCRC # 89-200-023	Adjacent to northeastern border & corner of project area	HT-89-031: Fire cracked rock and bone fragments.
HCRC # 90-200-017	0.6 km to the southeast	No historic properties. Historic trail noted.
HCRC # 90-600-023	Within the project area & extending 2 km, due west	No historic properties.
HCRC # 91-600-006	Within the project area	No historic properties.
HCRC # 92-600-026	Adjacent to & perpendicular to northern border of project area	No historic properties.
HCRC # 93-600-002	Within the project area	No historic properties.
HCRC # 93-600-005	0.1 km to the southwest	HT-93-003: Historic can scatter HT-93-004: Historic concrete block foundation.
HCRC # 94-600-001	Within the project area	HI-94-003: Prehistoric; Isolated cryptocrystalline silica flake. Modern debris noted
HCRC # 94-600-017	Adjacent to northern border of project area	HI-94-016: Isolated cryptocrystalline silica flake. HI-94-017: Isolated coffee pot.
HCRC # 94-600-034	0.05 km to the south	HI-94-018: Historic can. HI-94-019: Historic army communications line, with batteries.
HCRC # 94-600-040	Within the project area & extending 2 km, due west	HT-94-022: Historic trash scatter.
HCRC # 94-200-097	Within the project area	No historic properties

D. EXPECTED HISTORIC AND PREHISTORIC LAND USE AND SITE SENSITIVITY

1. Are there known sites in the general area? ☒ Yes ☐ No

2. Are sites expected? ☒ Yes ☐ No

Few prehistoric sites have been found in the 200 Plateau Area, approximately 12.5 km from permanent water at the Columbia River. The spring that existed at West Lake, 3.4 km from the project site, suggests a closer intermittent water source for prehistoric peoples. Gable Mountain and Gable Butte are located about 4.0 km to the northeast and northwest of the project area, respectively. Extensive prehistoric sites are not expected so far from permanent water, however isolated prehistoric artifacts and historic trash scatters are expected.

E. FIELD METHODS

1. Much of the project area had been surveyed by previous projects (see Figure 2). Intensive pedestrian survey was conducted between July 7 and July 13, 1994, that covered the remaining 1.26 km² of the project area. Survey was done in transects spaced 20 m apart, following procedures in PNL Technical Procedure CR-1. Transects were

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

oriented north/south so as to avoid casting a shadow over individual transect paths. Participants scanned an area 5 m to either side of the transect center line, thus having potential for 100% discovery of concentrations of surface artifacts larger than 10 m in diameter, as well as most smaller concentrations. The lowest estimated discovery rate, at 50%, was expected for single, isolated artifacts. Blowouts, with 100% visibility were examined more intensely.

2. Areas not examined and reasons why: The area parallel to and east of Highway 4 South was not surveyed. This corridor is 65 m wide (west/east) and 550 m long and had been cleared of native vegetation and covered with small gravel. The roped off corridor extends south to the steam overpass on the Route 3. A borrow pit which is actively being mined, located just west of 200 East Area, was not surveyed. The area north of the borrow pit, from the railroad tracks to the pit, was not surveyed because the surface had been covered with modern fill consisting of pea gravel.
3. Personnel conducting and assisting in this survey: M.K. Wright, M.V. Dawson, D.C. Dauble, J.E. Wood, A. Mitchell.
4. Date(s) of survey: July 7, 11, 12, and 13, 1994.
5. Visibility on surface: Estimate: 35%
Visibility of subsurface: Estimate: >1%

Visibility range from 0-20 % in the disturbed areas to 100% in blowouts, these generally surrounding a shrub.
6. Problems encountered: Cheat grass has almost completely invaded the disturbed areas and reduced surface visibility in some areas to > 5% . Also, areas were inaccessible where loose tumbleweeds had become caught and clustered in and around big sage.

F. RESULTS

1. All cultural resources recorded for this area: ☐None

One historic site with a prehistoric component and three isolated prehistoric artifacts are located within the proposed TWRS complex, Site A. and are listed below.

<u>HCRL No.</u>	<u>State No.</u>	<u>Site Type</u>
HT-89-032	Not assigned	Historic wooden structure (corral/chute and gate) and associated trash. One cryptocrystalline silica flake
HI-94-003	Not assigned	Isolated cryptocrystalline silica flake
HI-94-045	Not assigned	Isolated cryptocrystalline silica flake
HI-94-046	Not assigned	Two isolated cryptocrystalline silica flakes

Site HT-89-032 appears to be the remains from a livestock operation, probably sheep. The presence of a hole-in-top can and very large big sage growing within the structure suggests that the structure dates to the early part of the 20th century. The integrity of the site has been

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

compromised as several artifacts have been removed from the site since 1989 when it was originally recorded. Using guidelines from the RP3 Agricultural Study Unit (Lindeman and Williams 1985), transitory features such as sheep driveways and summer camps usually do not warrant listing on the Register.

2. Cultural resources noted but not formally recorded: Modern trash located along the survey transects was noted but not recorded. This trash consists of beverage cans, one evaporated milk can, scraps of wire and metal, wood fragments, broken ceramic insulators, and a sectioning valve.

Repository (for all original survey records, photos, maps, and artifacts): All original records, maps, etc. are stored at the Hanford Cultural Resources Laboratory in Richland, Washington. No artifacts were collected. Photographs were taken of the site and all recorded isolates.

G. CONCLUSIONS AND RECOMMENDATIONS:

Site HT-89-032 is not considered eligible for inclusion on the National Register of Historic Places. The integrity of the site has been compromised as several artifacts have been removed from the site since 1989 when it was originally recorded. Using guidelines from the RP3 Agricultural Study Unit (Lindeman and Williams 1985), transitory features such as sheep driveways and summer camps usually do not warrant listing on the Register.

The possibility of buried cultural deposits is always a possibility, especially in an area with shifting sand dunes and rapid eolian deposition. The potential for extensive cultural deposits is unlikely, however, given the location's distance from a permanent water source.

If the project is built in this area there will be no direct impacts to any known historic property. However, there could be indirect impacts on the traditional cultural properties of Gable Mountain and Gable Butte including visual impacts and noise. Such impacts may be considered adverse according to provisions in the American Indian Religious Freedom Act. Results of this report will be incorporated into the decision making /planning process.

H. REFERENCES CITED

Daubenmire, R. 1970 Steppe vegetation of Washington. Wash. Agric. Expt. Sta. Tech. Bull., 62, 131 pp.

Lindeman, G. and K. Williams, 1985, revised edition (1986) by Office of Archaeology and Historic Preservation. Resource Protection Planning Process (RP3) Agricultural Study Unit. Washington State Department of Community Development Office of Archaeology and Historic Preservation.

PNL Technical Procedure, CR-1, Revision 1. 1994 Identification, Evaluation, and Treatment of Cultural Resources.

I. ATTACHMENTS

- | | | |
|---|-----|------------------------------|
| 1. Site forms for each site recorded ? | [X] | HT-89-032 |
| 2. Isolate forms for each isolate recorded? | [X] | HI-94-045 and HI-94-046 |
| | | HI-94-003 recorded in Survey |
| | | Report for HCRC 94-600-001. |

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

- | | | |
|-------------------------------|-------------------------------------|-----------|
| 3. Overview location map | <input checked="" type="checkbox"/> | Figure 1. |
| 4. Quad map of surveyed area? | <input checked="" type="checkbox"/> | Figure 2. |
| 5. Other attachments? | <input type="checkbox"/> | |

J. CERTIFICATION OF RESULTS

I certify that I conducted the investigation reported here, that my observations and methods are fully documented, and that this report is complete and accurate to the best of my knowledge.

DIANA C. DAUBLE
Reporter


Signature

8.15.94
Date

M.K. Wright
Reviewer

Not applicable
Concurrence (Signature)

8/15/94
Date

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054
Project Name: Tank Waste Remediation Systems Complex (TWRS)

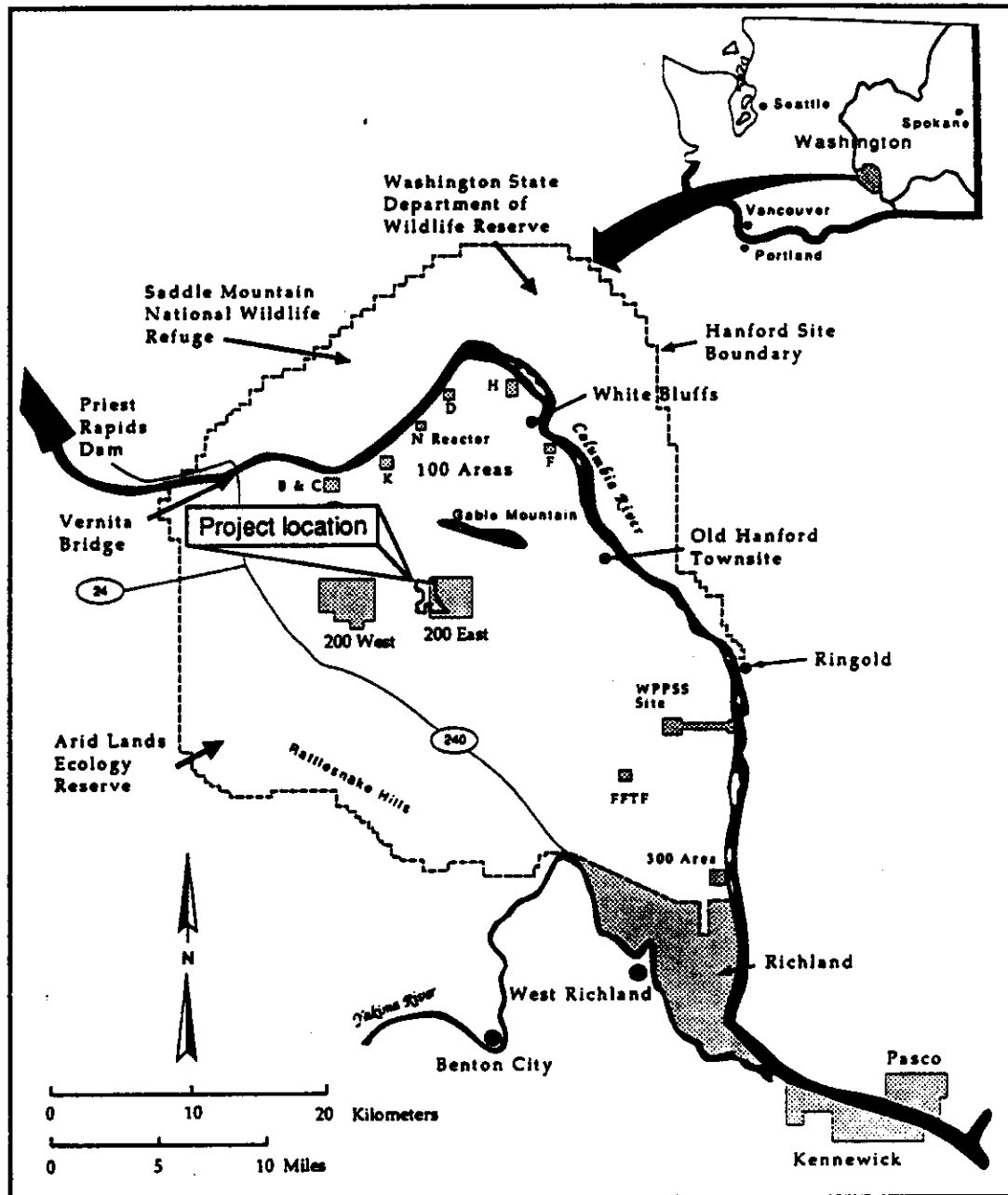


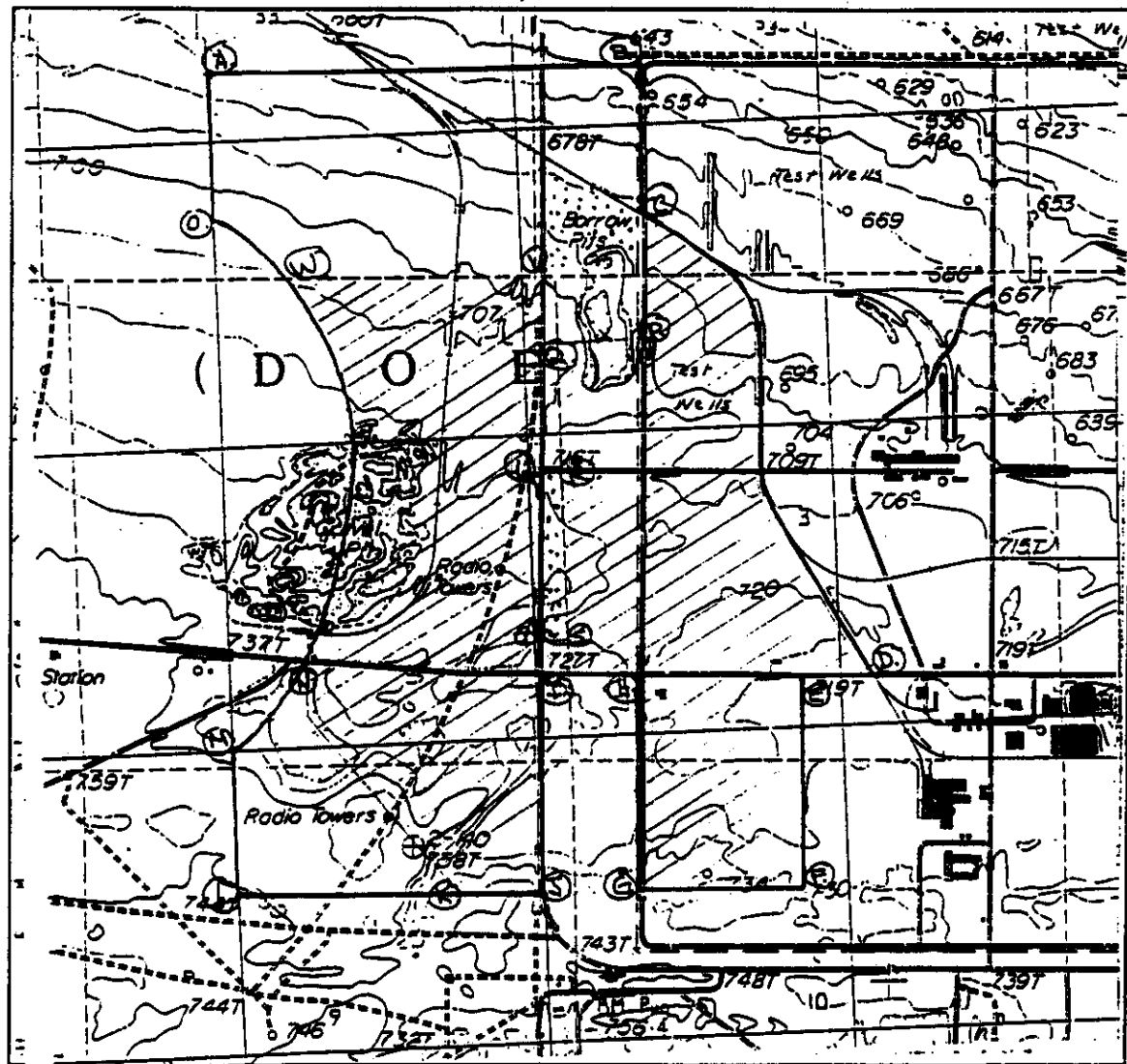
Figure 1. Location of the proposed TWRS complex on the Hanford Site.

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-054

Project Name: Tank Waste Remediation Systems Complex (TWRS)

GABLE BUTTE QUADRANGLE, WASHINGTON - 7.5 MINUTE SERIES



 Areas previously surveyed

 Not surveyed- inaccessible

SCALE 1:24000

1 0.5 0 KILOMETERS 1 2
1000 0 1000 2000
METERS

CONTOUR INTERVAL : 10 FEET

Figure 2. Location of the proposed TWRS Complex, HCRC#94-600-054, T13NR26E Sect.33,34 & T12NR26E Sect. 3,4, 9, 10.



Battelle

Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509) 373-2894

September 28, 1994

Mr. C. R. Pasternak
Site Infrastructure Division
Richland Operations Office
Department of Energy
P. O. Box 550/A5-15
Richland, WA 99352

Dear Mr. Pasternak:

**CULTURAL RESOURCES REVIEW OF THE TANK WASTE REMEDIATION SYSTEMS
COMPLEX (TWRS): SITE B PROJECT. HCRC #94-600-060.**

The Hanford Cultural Resources Laboratory (HCRL) completed the survey required for the TWRS Complex Site B project, requested by the Westinghouse Hanford Company. The HCRL found no cultural materials during the survey. Two historic isolates, HI-88-024 and HI-88-025, were found in the project area during a previous survey; the forms for the isolates were transmitted to you with the TWRS Complex Site C report, dated August 17, 1994. The enclosed copies of the survey narrative and request information are for your review and submittal to the State Historic Preservation Officer (SHPO) and the appropriate Native American tribes, with one copy for your records.

Please contact Beth Crist with questions concerning this project.

Very truly yours,

for *M.K. Wright*
P. R. Nickens
Project Manager
Cultural Resources Project

mec

Enclosures

cc: J. Granger
R. E. Jaquish
G. McClure
LB/File

CULTURAL RESOURCES REPORT NARRATIVE

HANFORD CULTURAL RESOURCES LABORATORY Pacific Northwest Laboratory

A. NAME AND FULL DESCRIPTION OF THE PROPOSED UNDERTAKING

Project Number: HCRC # 94-600-060

Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

The survey was done in response to a proposed project that will involve the construction of the Tank Waste Remediation Systems Complex on the Hanford Site in south central Washington State. One of the proposed site locations (Site B) is within and to the east of the 200 East Area (Figure 1). The Hanford Site is managed by the Department of Energy. The proposed site measures 2.3 km², however, a considerable amount of the area had been walked by previous surveys or had been previously disturbed by Hanford related projects including the former Grout facility. A pedestrian survey covering approximately 1.3 km² of previously unsurveyed and undisturbed ground was conducted August 29, 30, 31, and September 14, 1994.

B. LOCATION AND GENERAL ENVIRONMENTAL SETTING

The Tank Waste Remediation Systems complex, Site B, is located east of the 200 East Area on what is locally known as the 200 Area Plateau. Eolian sands overlie Pleistocene sands and gravels deposited during "catastrophic" glacial floods. Exposures in the Grout Facility excavations indicate that eolian deposits are 1 - 2 m thick in this part of the project area. The surface topography is low-relief stabilized dunes with the dunes having a greater amplitude in the southern part of the project area. The dunes consist of particles that range from silt to coarse sand. The closest source of permanent water is the Columbia River, approximately 9.6 km (6 miles) to the east. A spring at West Lake is located 5.2 km (3.1 miles) from the northwest corner of the project area and may have provided an intermittent source of water. Elevations in the project area range from 195 m (650 ft.) in the northeast corner to 218 m (725 ft.) in the southwest corner. Gable Mountain is located approximately 4 km (2.5 miles) north of the project area with Gable Butte being approximately 9.0 km (5.6 miles) to the northwest. These landforms are considered sacred by the Wanapum and Yakama peoples and are considered traditional cultural properties. Gable Mountain and Gable Butte are considered to be eligible for listing on the National Register of Historic Places.

Modern disturbances in the project area include Hanford related developments in the northwest portion of Site B. The eastern half of Site B is relatively undisturbed with the exception of the Grout Facility area located near the center of the eastern portion. Other disturbances in the eastern portion include roads, firebreaks, and wells.

The vegetation is a steppe-shrub community (Daubenmire 1970) dominated by big sagebrush (*Artemisia tridentata*) with an understory of forbs and grasses in the areas that have not been previously disturbed. Cheat grass (*Bromus tectorum*) and Russian thistle (*Salsola kali*) are dominant in areas which have been disturbed. Other annual forbs were also found in the disturbed areas, with some of the native shrubs, forbs, and grasses recolonizing the older disturbed areas. Plant species identified during the survey within the proposed project area are listed in Table 1.

Table 1. Plant species on the proposed site of the TWRS complex; Site B.

	Species	Common name
Annual grass	<u>Bromus tectorum</u>	Cheat grass
Perennial grass	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Poa Sandbergii</u>	Sandberg's bluegrass
	<u>Sitanion hystrix</u>	Bottlebrush squirreltail

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060
Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

	<u>Stipa comata</u>	Needle-and-thread grass
	<u>Agropyron cristatum</u>	Crested wheatgrass
Annual forbs	<u>Ambrosia acanthicarpa</u>	Bur ragweed
	<u>Cryptantha circumscissa</u>	Matted cryptantha
	<u>Descurania pinnata</u>	Tansy mustard
	<u>Lactuca serriola</u>	Prickly lettuce
	<u>Salsola kali</u>	Russian thistle
	<u>Sisymbrium altissimum</u>	Tumble mustard
Perennial forbs	<u>Achillea millefolium</u>	Yarrow
	<u>Agoseris glauca</u>	False dandelion
	<u>Balsamorhiza careyana</u>	Carey's balsamroot
	<u>Calochortus macrocarpus</u>	Sagebrush mariposa lily
	<u>Comandra umbellata</u>	Bastard Toadflax
	<u>Cymopterus terebinthinus</u>	Turpentine springparsley
	<u>Erigeron filifolius</u>	Threadleaf fleabane
	<u>Erigeron linearis</u>	Desert yellowdaisy
	<u>Machaeranthera canescens</u>	Hoary aster
	<u>Oenothera pallida</u>	Pale evening-primrose
	<u>Leptodactylon pungens</u>	Prickly phlox
	<u>Phlox longifolia</u>	Longleaf phlox
	<u>Psoralea lanceolata</u>	Dune scurfpea
	<u>Sphaeralcea munroana</u>	Orange globe mallow
	<u>Eriogonum vimineum</u>	Broom buckwheat
	<u>Epilobium paniculatum</u>	Tall willowherb
	<u>Chaenactis douglasii</u>	Hoary chaenactis
Shrubs	<u>Artemisia tridentata</u>	Big sage
	<u>Chrysothamnus nauseosus</u>	Gray rabbitbrush
	<u>Chrysothamnus viscidiflorus</u>	Green rabbitbrush
	<u>Grayia spinosa</u>	Spiny hopsage

Table 2 lists those animal species or their sign which were observed at the site during survey in August and September, 1994.

Table 2. Animals or their sign observed at the proposed site of the TWRS Complex; Site B.

	<u>Scientific name</u>	<u>Common name</u>
Mammals	<u>Canis latrans</u>	Coyotes
	<u>Cervus canadensis</u>	Elk
	<u>Citellus townsendi</u>	Townsend's ground squirrel
	<u>Lepus californicus</u>	Black-tailed jackrabbit
	<u>Odocoileus hemionus</u>	Mule deer
	<u>Peromyscus maniculatus</u>	Deer mouse
	<u>Taxidea taxus</u>	Badger
	<u>Thomomys talpoides</u>	Northern pocket gopher

CULTURAL RESOURCES REPORT NARRATIVE

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Birds	<u>Amphispiza belli</u>	Sage sparrow
	<u>Chordeiles minor</u>	Common nighthawk
	<u>Hirundo pyrrhonota</u>	Cliff swallows
	<u>Eremophila alpestris</u>	Horned lark
	<u>Sturnella neglecta</u>	Western meadowlark
	<u>Pica pica</u>	Black-billed Magpie
	<u>Corvus brachyrhynchos</u>	American Crow
Reptiles	<u>Uta stansburiana</u>	Sideblotched lizard
	<u>Coluber constrictor</u>	Yellow-bellied racer
	<u>Pituophis melanoleucus</u>	Great Basin gopher snake

Aerial photograph(s): EG&G 5673, exp. 145, 5/7/87, 1:19900
 EG&G 5673, exp. 174, 5/7/87, 1:19900

USGS topographic map(s): Gable Butte, Washington 7.5 minute quadrangle. 1986 edition.
 Hanford, Washington 7.5 minute quadrangle. 1986 edition.

Legal description: T12 N R 26 E Sections 1, 2, 11, & 12.

UTMs: Corners of area reviewed (see Figure 2):

<u>Map Reference Point</u>	<u>Zone</u>	<u>m Northing</u>	<u>m Easting</u>
A	11	<u>5158500</u>	<u>305820</u>
B	11	<u>5158460</u>	<u>306480</u>
C	11	<u>5158250</u>	<u>356500</u>
D	11	<u>5158250</u>	<u>306380</u>
E	11	<u>5157930</u>	<u>306380</u>
F	11	<u>5157750</u>	<u>306240</u>
G	11	<u>5157460</u>	<u>306520</u>
H	11	<u>5157460</u>	<u>307100</u>
I	11	<u>5157850</u>	<u>307120</u>
J	11	<u>5157850</u>	<u>307490</u>
K	11	<u>5157630</u>	<u>307880</u>
L	11	<u>5157640</u>	<u>308180</u>
M	11	<u>5158000</u>	<u>307660</u>
N	11	<u>5158260</u>	<u>307670</u>
O	11	<u>5158300</u>	<u>307790</u>
P	11	<u>5158720</u>	<u>308110</u>
Q	11	<u>5158720</u>	<u>308530</u>
R	11	<u>5157160</u>	<u>308500</u>

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060
Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

S	11	<u>5157270</u>	<u>305700</u>
T	11	<u>5157790</u>	<u>305800</u>

C. PRE-FIELD RESEARCH

1. Sources of information checked:

- ☒ Survey and Site Location Maps
- ☒ Previous Reports
- ☒ Aerial Photographs
- ☒ GLO Plats

One significant feature is indicated on the 1880 GLO plats near the project area. A trail is located approximately 1.6 km (1 mi) southwest of the southwest corner of the project area.

2. Summary of previous studies in this general area, similar terrain: Projects within 0.8 km are listed below.

<u>Report No./Title</u>	<u>Distance/Direction</u>	<u>Results</u>
HCRC # 87-200-001	0.12 km from project area	No historic properties.
HCRC # 87-200-002	Within the project area (Grout Facility)	No historic properties.
HCRC # 87-200-003	0.55 km to the west	No historic properties.
HCRC # 87-200-004	0.8 km to the west	No historic properties.
HCRC # 87-600-008	0.05 km to the southeast	45-BN-425: HI-87-003-006.
HCRC # 87-200-012	0.6 km to the southeast	No historic properties.
HCRC # 87-200-036	0.6 km to the west	No historic properties.
HCRC # 87--200-046	Adjacent to western border	No historic properties.
HCRC # 88-200-015	0.1 km to the north	No historic properties.
HCRC # 88-200-034	0.6 km to the west	No historic properties
HCRC # 88-200-038	Southwest section of project area (Chatters and Cadoret 1990)	HI-88-024 & HI-88-025
HCRC # 88-200-047	0.45 km to northeastern corner of project area	No historic properties.
HCRC # 88-200-055	Within the project area	No historic properties.
HCRC # 88-200-056	Adjacent to eastern border of project area	No historic properties.
HCRC # 89-200-023	0.35 km to the southwest	HT-89-031: Fire cracked rock and bone fragments
HCRC # 90-600-006	0.7 km to northeastern corner of project area	No historic properties.
HCRC # 92-600-026	Within the project area	No historic properties.
HCRC # 92-200-008	Within project area	Hole-in-cap can, collected.

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060

Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

HCRC # 93-600-005

Adjacent to southern border of
project area

HT-93-003: Historic can
scatter

HT-93-004: Historic concrete
block foundation

HCRC # 93-600-016

No historic properties

D. EXPECTED HISTORIC AND PREHISTORIC LAND USE AND SITE SENSITIVITY

1. Are there known sites in the general area? ☒ Yes ☐ No

2. Are sites expected? ☒ Yes ☐ No

Few prehistoric sites have been found in the 200 Area Plateau which is approximately 9.6 km (6 mi) from the Columbia River, the closest permanent water. The spring that existed at West Lake, 5.2 km (3.9 mi) from the project site, suggests a closer intermittent water source for prehistoric peoples. Gable Mountain and Gable Butte are located about 4 km (2.5 mi) to the north and 9.0 km (5.6 mi) to the northwest of the project area, respectively. Extensive prehistoric sites are not expected so far from permanent water, however isolated prehistoric artifacts, historic trash scatters, and possibly a lithic scatter, are expected.

E. FIELD METHODS

1. Much of the project area had been surveyed by previous projects (see Figure 2). Intensive pedestrian survey was conducted between August 29 and September 14, 1994, that covered the remaining 1.3 km² of the project area. Survey was done in transects spaced 20 m apart, following procedures in PNL Technical Procedure CR-1. Most transects were oriented north/south so as to avoid casting a shadow over individual transect paths. A combination of north/south, east/west, and odd-angled transects were employed to best cover the undisturbed ground within the Grout Facility fence. Participants scanned an area 5 m to either side of the transect center line, thus having potential for 100% discovery of concentrations of surface artifacts larger than 10 m in diameter, as well as most smaller concentrations. The lowest estimated discovery rate, at 50%, was expected for single, isolated artifacts. Blowouts, with 100% visibility were examined more intensely. Examination of dirt excavated from rodent burrows provided some indication of buried deposits (negative finding).
2. **Areas not examined and reasons why:** The project area west of Canton Avenue was not surveyed. The north half of that area has extensive disturbance due to Hanford activities and the southern portion has been previously surveyed. Because of the buried cribs east of Canton Avenue and previous surveys, our survey did not cover the area north of the east/west trending paved road that leads to the fenced area of the Grout Facility. The fenced area was surveyed with the exception of the extensive disturbance caused by the development of the Grout facility. Heavy concentrations of dead windblown tumbleweeds were packed in some sage brush areas making it impossible to see the ground, and in some cases, to walk through. These areas were not surveyed.
3. **Personnel conducting and assisting in this survey:** M.K. Wright, M. E. Crist, M.V. Dawson, D.C. Dauble, and N.A. Cadoret
4. **Date(s) of survey:** August 29, 30, 31, and September 14, 1994.
5. **Visibility on surface:** Estimate: 75%
Visibility of subsurface: Estimate: <1%

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060

Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

Visibility range from 0-20 % in the areas where dried tumbleweed was bunched up in the old growth big sage to 100% in blowouts.

6. **Problems encountered:** Cheat grass has almost completely invaded some disturbed areas and reduced surface visibility in some areas to less than 5% . Also, areas were inaccessible where loose tumbleweeds had become caught and clustered in and around big sage.

F. RESULTS

1. **All cultural resources recorded for this area:** No cultural resources were recorded during this survey. Two isolated artifacts, HI-88-024, an isolated double-soldered food can, and HI-88-025, an isolated sanitary can, were located within the project area on a previous survey.
2. **Cultural resources noted but not formally recorded:** Modern trash located along the survey transects was noted but not recorded. This trash consists of sanitary cans, one five-gallon can, scraps of plastic, paper, aluminum foil, rubber, and wooden stakes.

Repository (for all original survey records, photos, maps, and artifacts): All original records, maps, etc. are stored at the Hanford Cultural Resources Laboratory in Richland, Washington. No artifacts were collected.

G. CONCLUSIONS AND RECOMMENDATIONS:

The possibility of buried cultural deposits is always a possibility, especially in an area with shifting sand dunes and rapid eolian deposition. The potential for extensive cultural deposits is unlikely, however, given the location's distance from a permanent water source.

If the project is built in this area there will be no direct impacts to any known historic property. However, there could be indirect impacts on the traditional cultural properties of Gable Mountain and Gable Butte including visual impacts and noise. Such impacts may be considered adverse according to provisions in the American Indian Religious Freedom Act. Results of this report will be incorporated into the decision making /planning process.

H. REFERENCES CITED

J.C. Chatters and N.A. Cadoret 1990 *Archaeological Survey of the 200 East and 200 West Areas, Hanford Site, Washington*. PNL-7264. Pacific Northwest Laboratory, Richland, Washington.

Daubenmire, R. 1970 *Steppe vegetation of Washington*. Wash. Agric. Expt. Sta. Tech. Bull., 62, 131 pp.

PNL Technical Procedure, CR-1, Revision 1. 1994 *Identification, Evaluation, and Treatment of Cultural Resources*.

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060

Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

I. ATTACHMENTS

- | | | |
|---|-------------------------------------|-----------|
| 1. Site forms for each site recorded ? | <input type="checkbox"/> | |
| 2. Isolate forms for each isolate recorded? | <input type="checkbox"/> | |
| 3. Overview location map | <input checked="" type="checkbox"/> | Figure 1. |
| 4. Quad map of surveyed area? | <input checked="" type="checkbox"/> | Figure 2. |
| 5. Other attachments? | <input type="checkbox"/> | |

J. CERTIFICATION OF RESULTS

I certify that I conducted the investigation reported here, that my observations and methods are fully documented, and that this report is complete and accurate to the best of my knowledge.

M. V. Dawson, D. C. Dauble, N. A. Cadoret
Reporters

M. V. Dawson
Signature

9-27-94
Date

Paul R. 10
Reviewer

Concurrence (Signature)

9/28/94
Date

CULTURAL RESOURCES REPORT NARRATIVE

Project Number: HCRC# 94-600-060

Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B

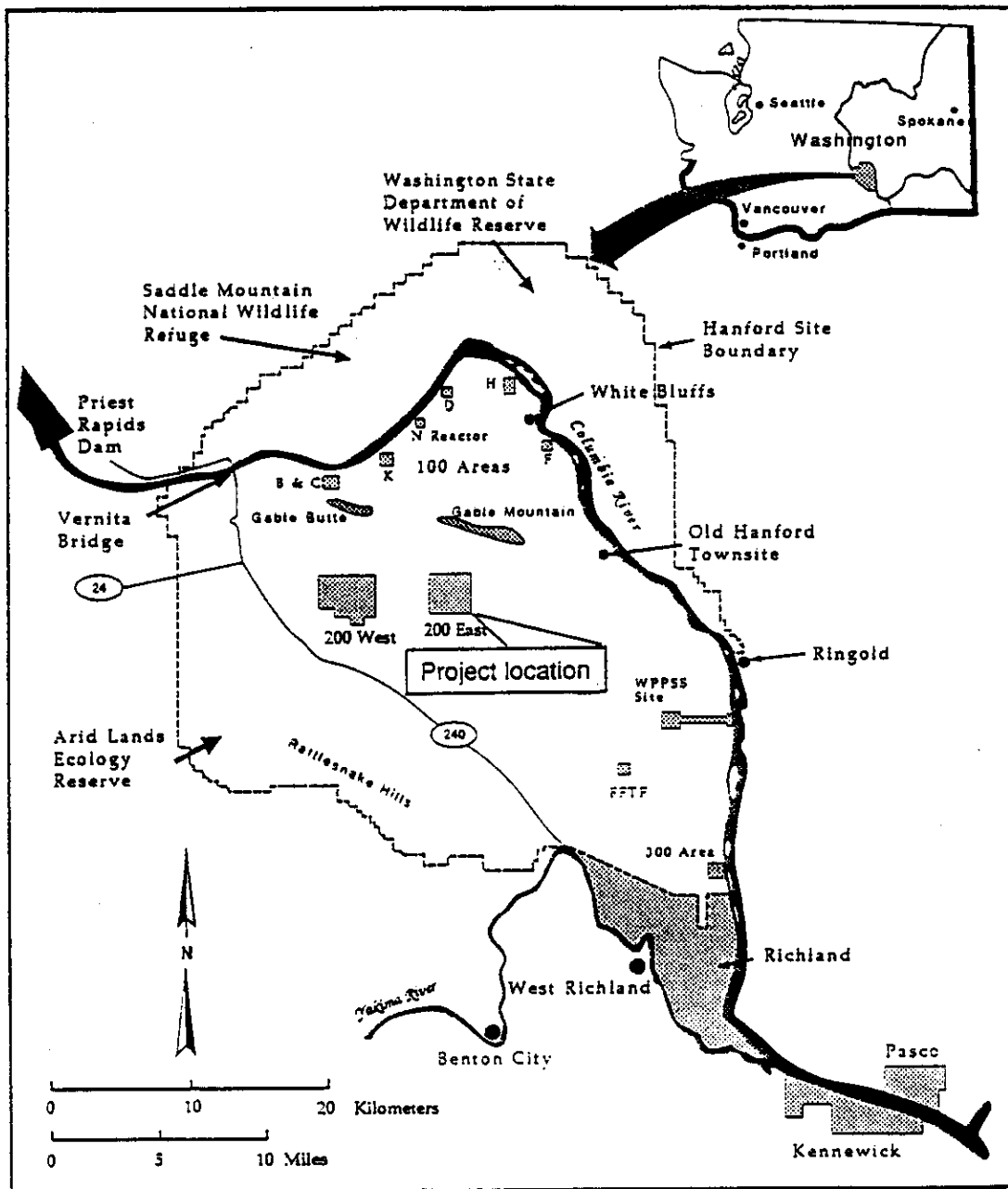


Figure 1. Location of the proposed TWRS complex, Site B, on the Hanford Site.

Project Number: HCRC# 94-600-060
Project Name: Tank Waste Remediation Systems Complex (TWRS): Site B





Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509) 373-2894

August 17, 1994

Mr. C. R. Pasternak
Site Infrastructure Division
Richland Operations Office
Department of Energy
P. O. Box 550/A7-27
Richland, WA 99352

Dear Mr. Pasternak:

**CULTURAL RESOURCES REVIEW OF THE TANK WASTE REMEDIATION SYSTEMS
COMPLEX - SITE C. HCRC #94-600-054.**

The Hanford Cultural Resources Laboratory (HCRL) has completed the cultural resources review for the Tank Waste Remediation Systems Complex - Site C project, requested by Westinghouse Hanford Company. No new survey was required for Site C of this project, as the literature and records review revealed that the entire project area had either been surveyed for previous projects or was too disturbed by Hanford Site activities to warrant a survey (see attached Gable Butte quadrangle map, 7.5 minute series, 1986).

Much of the project area within 200E has been surveyed for previous projects. Only one isolate, HI-88-025, was found within the project area in 200E. The isolate, recorded during HCRC #88-200-038, is a flat-bottomed crimped tin can. Another isolate, just east of the project area boundary, was found during the same project. This isolate, HI-88-024, is a double-soldered tin can. These isolate forms have not been submitted previously; three copies of each are enclosed now for your submittal to the State Historic Preservation Office (SHPO) and the appropriate Native American tribes, with one copy for your records. The unsurveyed areas within 200E have been extensively disturbed by building, utility, road and railroad construction.

The majority of the project area outside of 200E has also been surveyed for previous projects. No archaeological materials have been found in this section of the project area. However, one isolate was found just north of the northern project boundary. The isolate, HI-94-003, was recorded during HCRC #94-600-001; the isolate form was submitted with that project. The unsurveyed portions of this section of the project area have been disturbed by activities associated with the large gravel pit to the west and by borrow pit activities and road construction to the east.

The HCRL finds that the isolate within the project area and the two found just outside are not potentially eligible for inclusion on the National Register of Historic Places due to their lack of physical integrity. The possibility of buried cultural deposits always exists, but this potential is unlikely in this case due to the project's far distance from a permanent water source. The potential for buried deposits is additionally unlikely in the areas disturbed by various Hanford Site activities due to the extent and depth of the disturbance that these activities have caused. Although no direct impacts to any known historic properties will occur from this project, there could be indirect impacts, visual and noise, on the traditional cultural properties of Gable Mountain and Gable Butte.

Mr. Charles Pasternak
August 17, 1994
Page 2



Please contact the HCRL with any questions about this project.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Paul R. Nickens".

P. R. Nickens
Project Manager
Cultural Resources Project

mec

Enclosures

cc: J. Granger
R. E. Jaquish
G. McClure
LB/File



Battelle
 Pacific Northwest Laboratories
 Battelle Boulevard
 P.O. Box 999
 Richland, Washington 99352
 Telephone (509) 376-5345
 Fax (509) 372-3515

September 26, 1994

Ms. Jamie Granger
 Westinghouse Hanford Company
 H6-26
 Richland, WA 99352

Dear Ms. Granger,

BIOLOGICAL REVIEW OF THE TANK WASTE REMEDIATION SYSTEM (TWRS) SITES, #94-WHC-142

SUMMARY AND RECOMMENDATIONS

Significant portions of all three sites (referred to as A, B, and C) proposed for the tank waste remediation system (TWRS) contain substantial amounts of sagebrush (*Artemisia tridentata*) steppe habitat (Figures 1, 2, and 3), which is considered a priority habitat by the state of Washington (Washington Department of Wildlife 1993a). Species of concern that were identified in the field survey of the TWRS sites are shown in Table 1.

Table 1. Federal and state listed animal and plant species observed on or near TWRS sites A, B, and C.

Life form	Scientific name	Common name	Federal status ^a	State status ^b	Primary habitat ^c	Site Where Observed	Number of Sightings ^d
Plants	<i>Erigeron piperianus</i>	Piper's daisy	none	Sensitive	gravel ^e	A	observed
Birds	<i>Amphispiza belli</i>	sage sparrow	none	Candidate	shrub steppe/ nest sites	A B C	2 9 3
	<i>Buteo swainsoni</i>	Swainson's hawk	none	Candidate	trees and shrub steppe/nest sites	B	4 nest sites ^f
	<i>Lanius ludovicianus</i>	loggerhead shrike	Candidate 2	Candidate	shrub steppe/ nest sites	A B C	3 7 4

^a Federal status for animal species taken from U. S. Department of Interior, U. S. Fish and Wildlife Service: 50 CFR 17 Endangered and Threatened Wildlife and Plants, Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule, November 21, 1991.

^b State status for plant species taken from Washington Department of Natural Resources: Endangered, Threatened, and Sensitive Vascular Plants of Washington, 1994. State status for animal species taken from Washington Department of Wildlife: Species of Special Concern in Washington State - State and Federal Status, October 11, 1993.

^c Critical habitat for animal species taken from Washington Department of Wildlife: Priority Habitats and Species, November, 1993.

^d Sightings are the number of times the species was observed not numbers of nesting pairs.

^e Not designated as a critical habitat but rather as a substrate/habitat association.

^f Nests located during annual raptor surveys conducted from 1984-1991 by Pacific Northwest Laboratory. It is not known whether these nests were used in 1994. These nests could be used in the future.

The following three performance measurements were utilized to evaluate which of the TWRS sites poses the least impacts to biological resources and which can therefore be most reasonably mitigated:

- 1) presence/use of the area by species protected under the Endangered Species Act (ESA)
- 2) presence/use of the area by ESA candidate or Washington State protected species
 - number of species and individuals affected
- 3) Amount/value of wildlife habitat to be converted to other land uses
 - a. areal extent of all sagebrush habitat within a site
 - b. areal extent of sagebrush habitat that is continuous with other large blocks of sagebrush habitat located outside 200 East

Each performance measurement was evaluated using a rating scale from 1 and 3 (rating 1 is the most optimal for minimizing ecological impacts, and therefore mitigation requirements, and rating 3 is the least optimal). An overall site rating was derived by averaging performance measurement ratings. Ratings for sites A, B, and C were 1.8, 2.3, and 1.7, respectively. We therefore recommend development of site C because, relative to sites A and B, it would minimize impacts to species of concern and the sagebrush habitat upon which they depend.

Populations of the above species will probably not be substantially impacted by construction of one of the proposed TWRS alternatives. However, development of any one of the TWRS sites will eliminate a large portion of sagebrush habitat directly, and will contribute to fragmentation of the remaining habitat. The response of these species to fragmentation cannot currently be predicted in any detail and their level of resiliency is unknown. The cumulative effects of this and further fragmentation will probably decrease the long-term viability of these species on Hanford. It is currently the policy of DOE-RL to require mitigation for losses of mature sagebrush habitat such as that which will be destroyed by the TWRS. A sitewide plan for such mitigation is currently being developed by RL.

Wildlife use of habitats varies annually. Therefore, 1994 field observations of species of concern may be used to evaluate TWRS siting alternatives up to one year from the time the data were collected. Should construction not occur until the spring of 1995, the site selected for construction will need to be surveyed again between May and July, 1995.

BIOLOGICAL REVIEW

Methods

The objectives of this biological review were:

- to obtain an inventory of plants and animals present on or using the sites proposed for the TWRS
- to describe habitats on the sites
- to identify plant and animal species on or potentially using the sites that are protected under the ESA, candidates for such protection, species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington, or are protected under the Migratory Bird Treaty Act, and
- to evaluate the potential impacts of TWRS construction on all the protected species and sensitive habitats observed.

Field assessments at the proposed TWRS sites were conducted at site C by G. L. Fortner, R. K. Zufelt, C. Z. McKinnon, C. Duberstein, and T. Hanrahan on May 26, 27, and 31 and on June 1 and 9, 1994; at site A by G. L. Fortner, R. K. Zufelt, C. Z. McKinnon, C. Duberstein on June 20, and by C. Z. McKinnon, C. Duberstein, and M. R. Sackschewsky on June 29, 1994; and at site B by G. L. Fortner, R. K. Zufelt, C. Z. McKinnon, C. Duberstein, and T. Stevenson on July 18, and by G. L. Fortner, R. K. Zufelt, C. Z. McKinnon, C. Duberstein, T. Stevenson, and T. Hanrahan on July 19, 1994.

Field assessments were conducted by walking transects at 20 m intervals. Species lists were made of plants observed and animals or their sign. Mammal abundance was estimated based on whether the species or its sign was abundant, common, or rare (qualitative scale). Plant abundance was estimated using the Braun-Blanquet method (Bonham 1989). Habitats were classified according to dominant shrub and herbaceous species, based on the Braun-Blanquet results.

Survey results, the potential impacts of TWRS site development on biological resources, and an evaluation of the three sites are reported separately.

Results

Topography on the sites proposed for the TWRS is level. These sites are located in a mosaic of habitat types (Table 2 and Figures 1, 2, and 3) and substrates. Sagebrush habitat is the dominant habitat type on all three of the sites. Sagebrush habitat is considered priority habitat by the State of Washington due to its relative scarcity in the State and its value to many wildlife species (Washington Department of Wildlife 1993a). The sagebrush habitat on these three sites is required for nesting/breeding/foraging by the twelve animal species of concern identified in the biological review (Table 3). Four bird species of concern and three plant species of concern were observed during the surveys (Table 3). Additionally, three mammal and five bird species of concern could potentially occur in the area, based on habitat associations (Table 3). For example, isolated open

areas with low-growing herbaceous vegetation were observed during the field assessment. These areas are potential nesting habitat for long-billed curlews.

Table 2. Dominant vegetation on sites proposed for the tank waste remediation system (TWRS).

Site	Scientific name	Common name	Total Areal cover (ha)	Continuous Areal cover (ha) ^a
A	<i>Artemisia tridentata</i>	big sagebrush	140.4	117.0
	<i>Bromus tectorum</i>	cheatgrass	30.27	
	<i>Chrysothamnus nauseosus</i>	big rabbitbrush	20.6	
	<i>Salsola kali</i>	Russian thistle	43.45	
	gramineae ^b	grasses	0.00	
		disturbed vegetation ^c	37.67	
		gravel	47.06	
B	<i>Artemisia tridentata</i>	big sagebrush	189.23	115.57
	<i>Bromus tectorum</i>	cheatgrass	0.00	
	<i>Chrysothamnus nauseosus</i>	big rabbitbrush	1.08	
	<i>Salsola kali</i>	Russian thistle	34.69	
	gramineae	grasses	5.04	
		disturbed vegetation	5.56	
		gravel	0.00	
C	<i>Artemisia tridentata</i>	big sagebrush	148.67	60.11
	<i>Bromus tectorum</i>	cheatgrass	0.00	
	<i>Chrysothamnus nauseosus</i>	big rabbitbrush	30.81	
	<i>Salsola kali</i>	Russian thistle	71.86	
	gramineae	grasses	0.00	
		disturbed vegetation	11.51	
		gravel	53.62	

^a Continuous areal cover was only determined for big sagebrush habitat. Continuous areal cover is that portion of the total sagebrush habitat on one site that is contiguous with large blocks of sagebrush habitat located outside 200 East.

^b Grass habitat consists of those areas that have been revegetated with non-native species that have typically been used for revegetation on the Hanford Site such as crested wheatgrass (*Agropyron cristatum*).

^c Disturbed vegetation refers to those areas whose substrate has been mechanically disturbed resulting in disturbance of the vegetative cover.

Ferruginous hawks, Swainson's hawks, red-tailed hawks, prairie falcons, and burrowing owls (Table 3) are known to nest outside the proposed TWRS sites in the vicinity of 200 East and 200 West (Figure 4). While the proposed TWRS sites provide few if any nesting structures for these hawks and the prairie falcon, they do provide prime foraging habitat for these species. The proposed TWRS sites also provide suitable nesting habitat for burrowing owls and other species that may nest on the ground such as short-eared owls (*Asio flammeus*), northern harriers (*Circus cyaneus*), great horned owls (*Bubo virginianus*), and long-eared owls (*Asio otus*).

Three plant species of concern were observed during the surveys (Table 3). Piper's daisy was observed only in site A on the southeast perimeter of the gravel pit located in the northwest quadrant of the intersection of Route 3 and Route 4 South. Stalked-pod milkvetch and crouching milkvetch were observed at various locations on sites A, B, and C.

No other species protected under the Endangered Species Act, candidates for such protection, species listed as threatened, endangered, candidate, sensitive or monitor by the State of Washington were observed on the sites proposed for the TWRS.

Table 3. Federal and state listed animal and plant species observed on the sites proposed for the TWRS. Included are species potentially using the TWRS sites, based on known habitat associations, that were otherwise undetected during the survey.

Life form	Scientific name	Common name	Federal status ^a	State status ^b	Primary habitat ^c	Site Where Observed	Number of Sightings ^d / Potential ^e
Plants	<i>Astragalus sclerocarpus</i>	stalked-pod milkvetch	none	Monitor 3	sand/shrub steppe ^f	A, B. and C	observed
	<i>Astragalus succumbens</i>	crouching milkvetch	none	Monitor 3	sand/shrub steppe ^f	A, B. and C	observed
	<i>Erigeron piperianus</i>	Piper's daisy	none	Sensitive	gravel ^f	A	observed
Birds	<i>Amphispiza belli</i>	sage sparrow	none	Candidate	shrub steppe/ nest sites	A B C	3 10 4
	<i>Athene cunicularia</i>	burrowing owl	none	Candidate	shrub steppe/ nest sites and foraging areas	A&C	1 ^g
	<i>Buteo jamaicensis</i>	red-tailed hawk	none	protected	trees and shrub steppe/nest sites in urban areas		potential
	<i>Buteo regalis</i>	ferruginous hawk	Candidate 2	Threatened	powerlines and shrub steppe/ nest sites		potential
	<i>Buteo swainsoni</i>	Swainson's hawk	none	Candidate	trees and shrub steppe/nest sites	B	4 nest sites ^h
	<i>Falco mexicanus</i>	prairie falcon	none	Monitor	shrub steppe/ nest sites		potential
	<i>Lanius ludovicianus</i>	loggerhead shrike	Candidate 2	Candidate	shrub steppe/ nest sites	A B C	3 7 4
	<i>Numenius americanus</i>	long-billed curlew	Candidate 3C	Monitor	open shrub steppe/nest sites		potential
	<i>Oreoscoptes montanus</i>	sage thrasher	none	Candidate	shrub steppe/ nest sites		potential
	<i>Brachylagus idahoensis</i>	Pygmy rabbit	Candidate 2	Threatened	old-growth shrub steppe/all occurrences		potential
Mammals	<i>Lagurus curtatus</i>	sagebrush vole	none	Monitor	shrub steppe		potential
	<i>Spermophilus washingtoni</i>	Washington ground squirrel	none	Monitor	shrubsteppe/ concentrated populations		potential

- ^a Federal status for animal species taken from U. S. Department of Interior, U. S. Fish and Wildlife Service: 50 CFR 17 Endangered and Threatened Wildlife and Plants, Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule, November 21, 1991.
- ^b State status for plant species taken from Washington Department of Natural Resources: Endangered, Threatened, and Sensitive Vascular Plants of Washington, 1994. State status for animal species taken from Washington Department of Wildlife: Species of Special Concern in Washington State - State and Federal Status, October 11, 1993.
- ^c Critical habitat for animal species taken from Washington Department of Wildlife: Priority Habitats and Species, November, 1993.
- ^d Sightings are the number of times the species was observed not numbers of nesting pairs.
- ^e These species were not observed during the field assessment. However, based on known habitat associations, these species may currently be using the area or may potentially use it in the future.
- ^f Not designated as a critical habitat but rather as a substrate/habitat association.
- ^g Incidental sightings made during annual raptor surveys conducted from 1984-1990 by Pacific Northwest Laboratory.
- ^h Nests located adjacent to site B of the TWRS. These nests were observed during annual raptor surveys conducted from 1984-1991 by Pacific Northwest Laboratory. It is not known whether these nests were used in 1994. These nests could be used in the future.

DEVELOPMENT OF THE TWRS SITES: POTENTIAL IMPACTS TO BIOLOGICAL RESOURCES

Stalked-pod milkvetch and crouching milkvetch are state monitor level 3 species. This means that these species are more abundant and/or less threatened in Washington than previously assumed. TWRS site construction is therefore not expected to substantially

decrease the long-term viability of populations of these species on Hanford or in Washington state. Piper's daisy is a state sensitive species. This means that this species is vulnerable or declining and could become endangered or threatened in the state without active management or removal of threats. Construction at TWRS site A would eliminate one population of this species and contribute to the species' decline on Hanford.

Loggerhead shrikes, sage sparrows, and sage thrashers are species that depend on mature big sagebrush habitat. Shrikes are known to select tall sagebrush as nest sites (Poole 1992). Sage sparrows and thrashers also nest in big sagebrush. Construction of the TWRS would remove sagebrush habitat, precluding these species from nesting there. Construction of the TWRS would also be expected to reduce the value of the area as foraging habitat for individuals of these species nesting in adjacent areas.

Burrowing owls nest in abandoned burrows of other ground-dwelling animals. Railroad construction would remove habitat for prey and displace ground-dwelling animals, thereby reducing the suitability of the area for nesting by burrowing owls.

Pygmy rabbits are known to utilize tall clumps of old-growth sagebrush habitat throughout most of their range. However, pygmy rabbits are not known to occur on the Hanford Site. TWRS site development would likely reduce the potential for this species' occurrence by removing habitat potentially suitable for its use.

Sagebrush voles are generally found in association with mature sagebrush habitat, although few have been captured outside the Arid Lands Ecology Reserve. They select burrow sites near sagebrush which also comprises a portion of their diet. TWRS site development would remove sagebrush habitat, precluding voles from utilizing the area.

TWRS site development may negatively affect raptor populations during nesting and thereby cause abandonment and reduce reproductive success. Disturbance of nesting raptors can be minimized by confining human activity to the non-nesting period or restricting activity within specified distances from nest sites. Distances have been suggested for the following species: Swainson's hawk - 0.8 km, ferruginous hawk - 1.6 km, prairie falcon - 1.0 km, and red-tailed hawk - 0.8 km (Suter and Jones 1981). Minimum distances specific to the Hanford Site have been recommended for Swainson's and ferruginous hawks, 2.2 km (Poole et al. 1988) and 1.0 km (Fitzner et al. 1993), respectively. The sites proposed for the TWRS are greater than 3.0 km from any known nest locations of these species, except for Swainson's hawks (Figure 4). Four nest sites of this species are located just east of 200 East, three within approximately 1.0 km of the southeast corner of 200 East (Figure 4) and one directly east of 200 East (Figure 4). These four nest sites are near TWRS site B (Figure 2). Development of site B would probably negatively impact nesting and rearing activities at these nest sites.

Although the three TWRS sites are relatively unimportant as nesting habitat for most raptors, it should also be evaluated as a potential foraging range for these species. TWRS site construction would displace small mammal populations which are an important component of the prey base of these species. Cody (1985) reported average home range

sizes for populations of the following species in Oregon, Idaho, Utah, and California; ferruginous hawks ranged from 3.14 to 8.09 km², red-tailed hawks from 2.18 to 3.08 km², and Swainson's hawks from 1.09 to 3.81 km². Poole et al. (1988) reported an average home range size of 6.97 km² for Swainson's hawks on Hanford. Average home ranges for ferruginous and red-tailed hawks on Hanford have not been documented. A somewhat conservative estimate of home range radius (the distance around a nest site in which habitat should remain unaltered) for these species may be obtained using the largest home range size and assuming home ranges are circular. Home range radii are thus 1.6 km for ferruginous hawks, 0.99 km for red-tailed hawks, and 1.49 km for Swainson's hawks (on Hanford). The proposed TWRS sites are greater than 2.0 km from any known nest locations of these species, except for Swainson's hawks (Figure 4). Four nest sites of this species are located just east of 200 East, three within approximately 1.0 km of the southeast corner of 200 East (Figure 4) and one directly east of 200 East (Figure 4). These four nest sites are near TWRS site B (Figure 2). The portion of site B located adjacent to these nests is a contiguous patch of sagebrush steppe habitat (Figure 2) which is prime foraging habitat for Swainson's hawks. Development of site B would therefore remove some of the foraging habitat within the home range of hawks using these nest sites. Except for Swainson's hawks, habitat losses within the home ranges of the other raptor species mentioned above are likely to be negligible.

TWRS site construction will negatively impact individuals of the above species. Yet populations of these species, considered as a whole, would probably not be substantially affected because similar sagebrush habitat is still relatively common on Hanford. However, planned developments in the 200 Area plateau, including TWRS site development, will eliminate a large portion of the sagebrush habitat directly, and will contribute to fragmentation of the remaining habitat. Fragmentation not only reduces the overall area of habitat available for use, but also alters the size and shape of habitat patches. The response of these species to fragmentation cannot currently be predicted in any detail and their level of resiliency is unknown. It is reasonable to expect that the **cumulative** effects of this and further fragmentation would decrease the long-term viability of these species on Hanford. It is currently the policy of DOE-RL to require mitigation of losses of mature sagebrush habitat on the Hanford Site. A sitewide plan for such mitigation is currently being developed by RL.

EVALUATION OF TWRS SITES A, B, AND C

The following three performance measurements are utilized below to evaluate which of the TWRS sites poses the least impact to biological resources and requires the least amount of mitigation:

- 1) presence/use of the area by species protected under the ESA
- 2) presence/use of the area by ESA candidate or Washington State protected species
 - number of species and individuals affected (from Table 1), except for state monitor level 3 species (Table 3)
- 3) Amount/value of wildlife habitat to be converted to other land uses
 - a. areal extent of all sagebrush habitat within a site (Table 2)

- b. areal extent of sagebrush habitat that is continuous with other large blocks of sagebrush habitat located outside 200 East (Table 2)

Results of these evaluations are shown in Table 4.

Table 4. Performance measurements for evaluation of the tank waste remediation system alternative sites. Pros and cons are listed for each measurement. Each measurement is assigned a rating between 1 and 3 (rating 1 is the most optimal for minimizing ecological impacts, and therefore mitigation requirements, and rating 3 is the least optimal). An overall site rating is derived by averaging measurement ratings.

SITE A			
Performance Criteria	Pros	Cons	Rating
1	No ESA species present		1
2		3 loggerhead shrikes 2 sage sparrows 1 population of Piper's daisy	2
3a		140.4 ha	2
3b		117.00 ha	3
Overall Site Rating			1.8

SITE B			
Performance Criteria	Pros	Cons	Rating
1	No ESA species present		1
2		7 loggerhead shrikes 9 sage sparrows 4 Swainson's hawks nest sites	3
3a		189.23 ha	3
3b		115.57 ha	3
Overall Site Rating			2.3

SITE C			
Performance Criteria	Pros	Cons	Rating
1	No ESA species present		1
2		4 loggerhead shrikes 3 sage sparrows	2
3a		148.67 ha	2
3b		60.11 ha	2
Overall Site Rating			1.7

Based on the above criteria, TWRS site C will pose the least threat to biological resources and is expected to be the least difficult to mitigate.

Sincerely,



C. A. Brandt, Ph.D.
Senior Research Scientist
Environmental Sciences Department

CAB/jmb

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TWRS - Site A

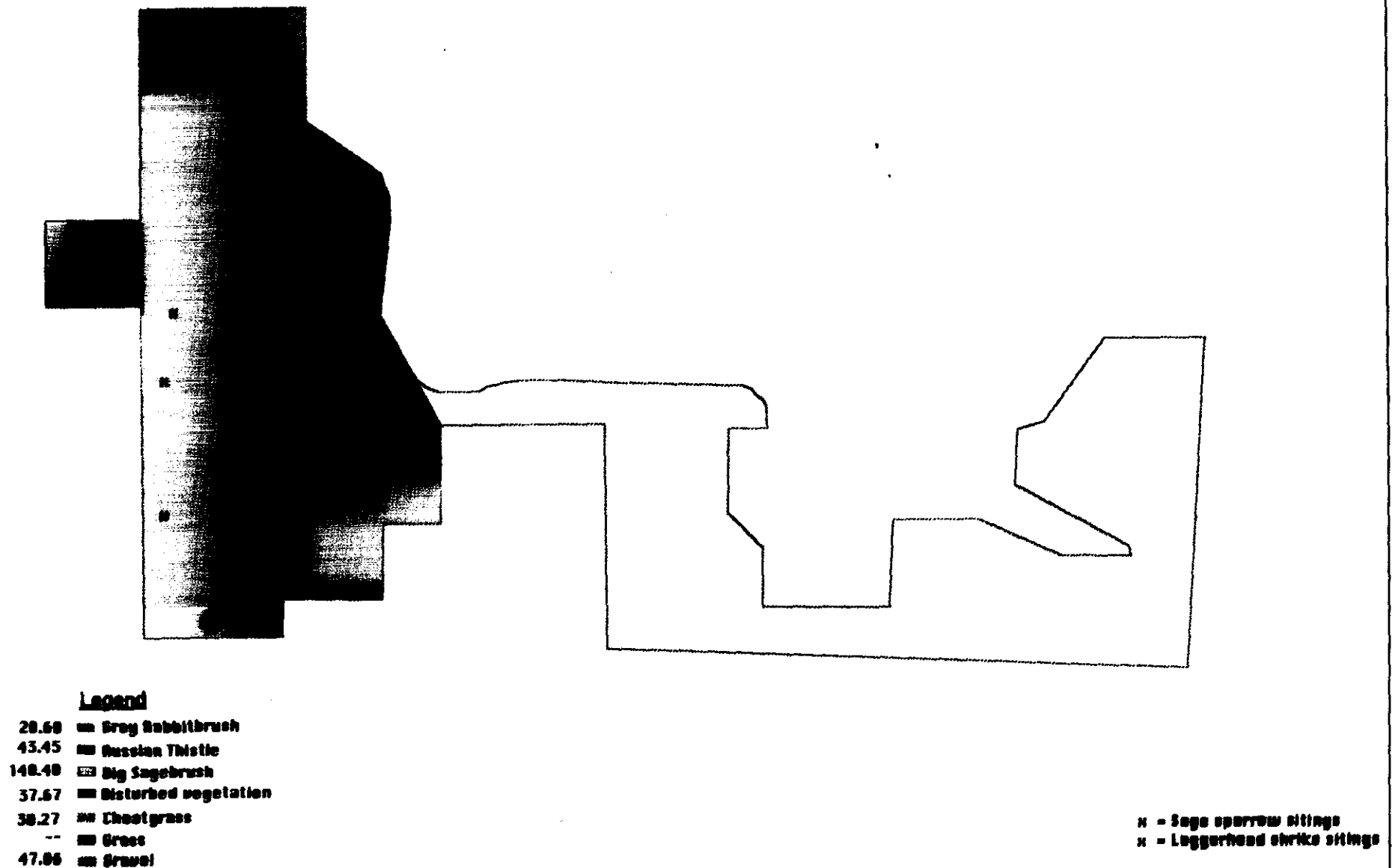


Figure 1. Habitat types in hectares on Site A proposed for the tank waste remediation system.

TWRS - Site B

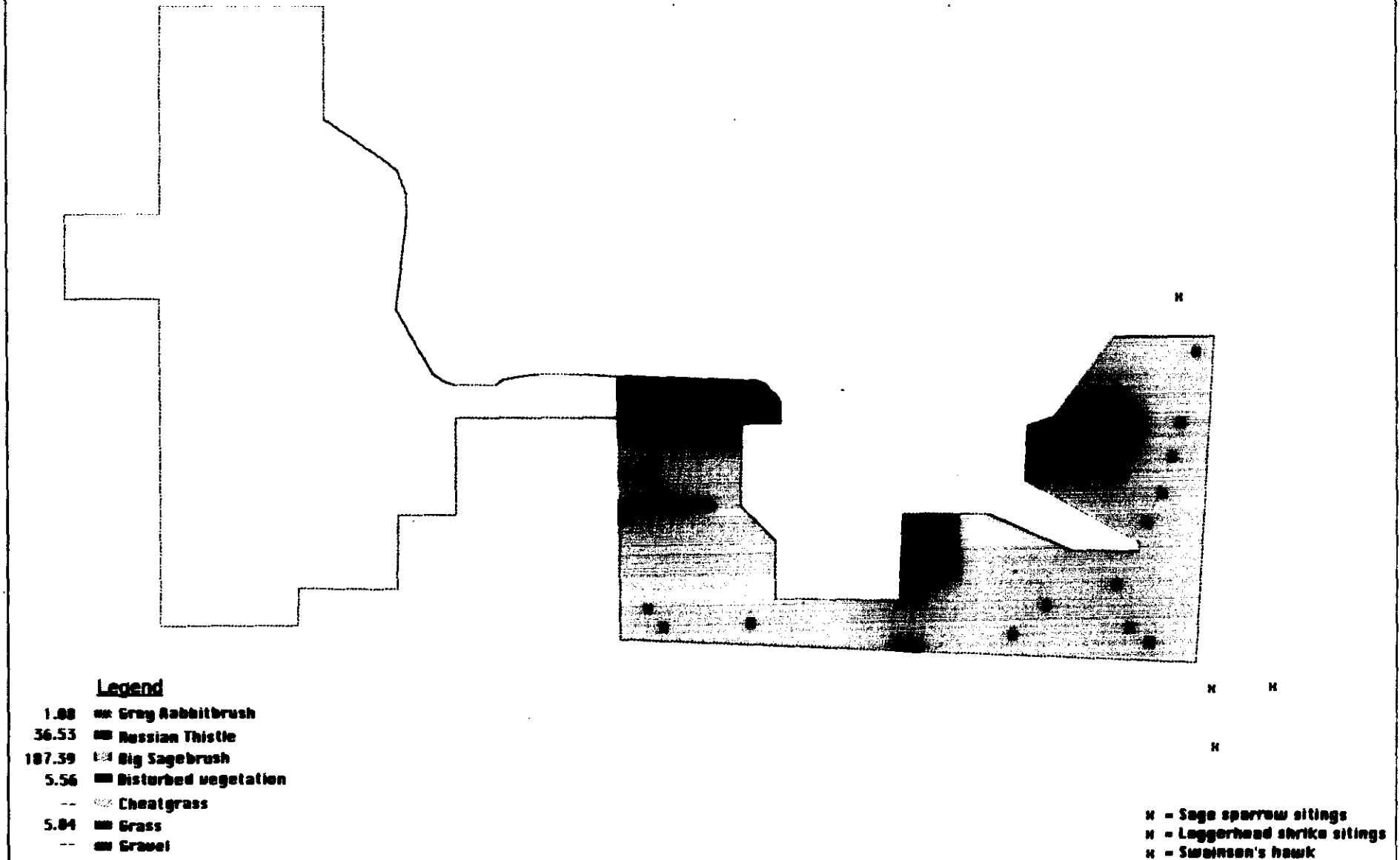


Figure 2. Habitat types in hectares on Site B proposed for the tank waste remediation system. Included are historic Swinson's hawk nest sites from 1984-1992 (unpublished data from annual raptor surveys conducted by Pacific Northwest Laboratory).

TWRS - Site C

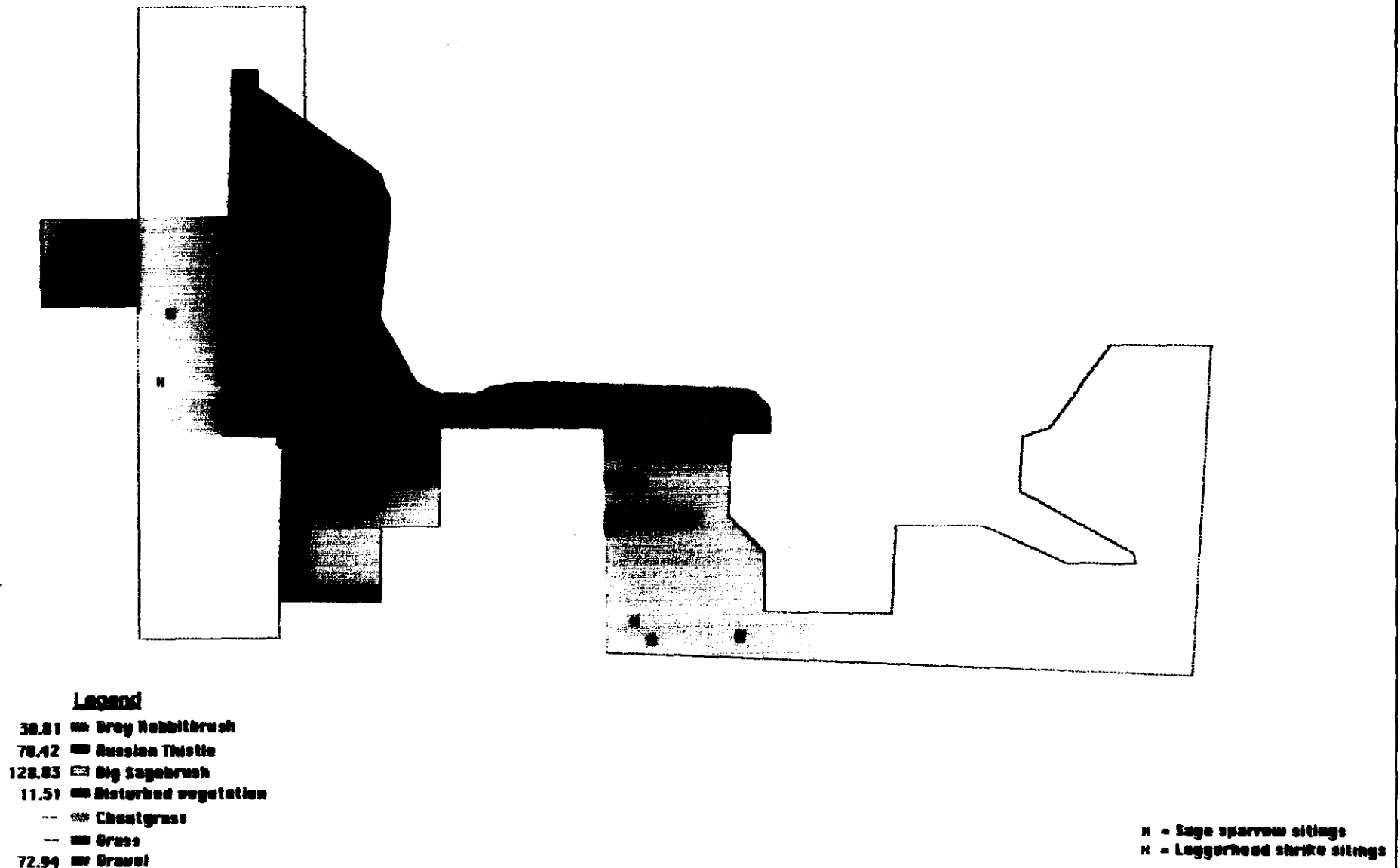
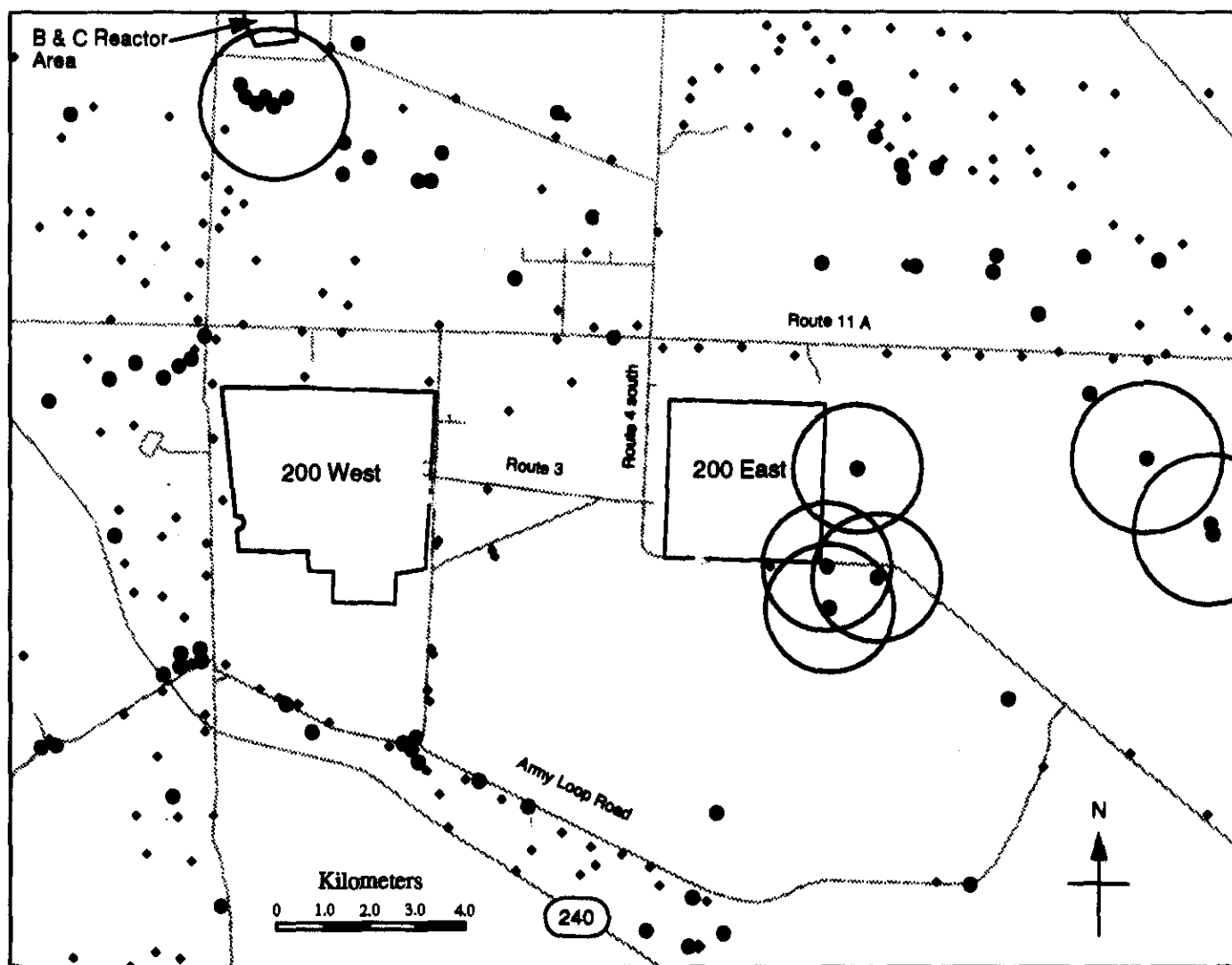


Figure 3. Habitat types in hectares on Site C proposed for the tank waste remediation system.



LEGEND

- Swainson's hawks (1992)
- Swainson's hawks (1984-1991)
- Home range radii for Swainson's hawks near 200 East (1.49 km)
- Red-tailed hawks (1992)
- Red-tailed hawks (1984-1991)
- Ferruginous hawks (1992)
- Ferruginous hawks (1984-1991)
- Ferruginous hawk home range radius (1.6 km)

- Prairie falcons (1984-1990)
- Burrowing owls (1984-1990)¹
- Great horned owls (1984-1990)¹
- Long-eared owls (1984-1990)¹
- Northern harriers (1984-1990)¹
- ◆ Loggerhead shrikes (1988-1989)

¹ incidental observations made during annual raptor surveys

Figure 4. Historic Raptor Nest Sites from 1984-1992 (unpublished data from annual raptor surveys conducted by Pacific Northwest Laboratory [PNL]). Historic Loggerhead Shrike Nest Sites from 1988-1989 (unpublished data from loggerhead shrike surveys conducted by PNL).

9456659

ATTACHMENT 2



Battelle

Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509) 372-1791

August 16, 1994

No Known Cultural Resources

Mr. W. B. Bancroft
Westinghouse Hanford Company
Tank Waste Remediation Systems
P. O. Box 1970/T4-08
Richland, WA 99352

Dear Mr. Bancroft:

CULTURAL RESOURCES EXEMPTION OF THE TANK FARM AREAS

The Department of Energy, Richland Operations Office has approved the cultural resources exemption for the 18 tank farm areas on the Hanford Site, proposed by the Hanford Cultural Resources Laboratory (HCRL). The exemption is based on the extensive disturbance caused by the original installation of the 177 tanks contained in the tank farm areas.

The exemption includes all maintenance and new construction performed within and 150 meters outside of the 18 fenced tank farm areas. It also includes modifying, adding, and removing mobile trailers within the above areas. Individual cultural resources reviews are no longer required for projects involving these types of activities.

The exemption does not include removing existing tanks or modifying or demolishing any permanent structures (buildings, water towers, etc.) within or 150 meters outside of the tank farms. Individual cultural resources reviews are still required for projects involving these types of activities.

Thank you for your assistance with the exemption preparation. Please let me know if you have any questions or need additional information.

Very truly yours,

M. E. Crist
Technical Specialist
Cultural Resources Project

Concurrence:

P. R. Nickens, Project Manager
Cultural Resources Project

cc: C. R. Pasternak, RL (3)
M. P. Campbell
T. L. Jennings
J. W. Comer
E. J. Austin Jr.
R. S. Rodriguez
J. A. Kimbrough
H. P. Fox
A. D. Olguin
S. D. McMath
K. J. Moss
T. L. Clark
R. H. Engelmann
File/LB

1) Copies to all NEPA Staff, FYI
2) Create a file for me,
"Resource reviews"



Battelle

Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509) 376-5345
FAX 372-3515

9405673

April 29, 1994

Mr. James A Crawford, So-09
Westinghouse Hanford Company
MO407, 200 East
Richland, WA 99352



Dear Mr. Crawford,

**BIOLOGICAL REVIEW OF THE 200 EAST AND 200 WEST TANK FARMS,
94-WHC-123**

This report summarizes the results of the biological review for the Tank Farms in 200 East and West Areas. A biological survey of the areas were conducted on April 29, 1994 by C. A. Brandt, under guide of Robert D Irwin of WHC. The sites were viewed from the perimeter. All plant and animal species observed or their sign were recorded. The survey focused on plant and animal species protected under the Endangered Species Act, candidates for such protection, and plant and animal species listed as threatened, endangered, candidate, sensitive, or monitor by the State of Washington.

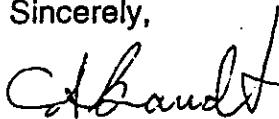
All sites are maintained with no mature plant cover of any kind. The only plants growing on any site were Russian thistle (*Salsola kali*), an alien annual weed. No birds were observed using the interior of the tank farm area as nesting habitat. European starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), and a pair of western kingbirds (*Tyrannus verticalis*) (at 241-BY) were nesting in nearby power lines and buildings.

No species protected under the endangered species act, candidates for such protection, or species listed as threatened, endangered, candidate, sensitive, or monitor by the Washington State government were observed during this survey. Consequently, no adverse impacts to such species would occur from any activities proposed for the Tank Farms or structures immediately associated with the Tank Farms within the next year.

Mr. James A Crawford
April 29, 1994
Page 2

This survey pertains to all work requiring Biological Review at the Tank Farms and structures immediately associated with the Tank Farms and their perimeter fences until April 1 of 1995.

Sincerely,



C. A. Brandt, Ph.D.
Project Manager
Ecological Compliance Assessment Project

cc: DM Bryant
WH Bryant
PF Dunigan
KA Gano
JA Hall (WDFW)
RH Engelmann
RD Hildebrand
File
LB

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author

Addressee

Correspondence No.

L. E. Borneman, 373-2821

C. C. Haass, RL

9456659

Subject: TRANSMITTAL OF BIOLOGICAL REVIEW AND CULTURAL RESOURCES REVIEW OF THE
TANK WASTE REMEDIATION SYSTEM SITES

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